DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS–R8–ES–2011–0114]

[4500030113]

Endangered and Threatened Wildlife and Plants; 90-Day Finding on a Petition to List the San Bernardino Flying Squirrel as Endangered or Threatened With Critical Habitat

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Notice of petition finding and initiation of status review.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), announce a 90-day finding on a petition to list the San Bernardino flying squirrel (*Glaucomys sabrinus californicus*) as endangered or threatened and to designate critical habitat under the Endangered Species Act of 1973, as amended (Act). Based on our review, we find that the petition presents substantial scientific or commercial information indicating that listing the San Bernardino flying squirrel may be warranted. Therefore, with the publication of this notice, we are initiating a review of

the status of the species to determine if listing the San Bernardino flying squirrel is warranted. To ensure that this status review is comprehensive, we are requesting scientific and commercial data and other information regarding this subspecies. Based on the status review, we will issue a 12-month finding on the petition, which will address whether the petitioned action is warranted, as provided in section 4(b)(3)(B) of the Act.

DATES: To allow us adequate time to conduct this review, we request that we receive information on or before **[**INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER**]**. The deadline for submitting an electronic comment using the Federal eRulemaking Portal (see **ADDRESSES**, below) is 11:59 p.m. Eastern Time on this date. After **[**INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER**]**, you must submit information directly to the Field Office (see **FOR FURTHER INFORMATION CONTACT,** below). Please note that we might not be able to address or incorporate information that we receive after the above requested date.

ADDRESSES: You may submit information by one of the following methods:

(1) *Electronically*: Go to the Federal eRulemaking Portal: *http://www.regulations.gov*. In the Enter Keyword or ID box, enter FWS–R8–ES–2011–0114, which is the docket number for this action. Then, in the Search panel on the left side of the screen, under the Document Type heading, click on the Proposed Rules link to locate this document. You may submit a comment by clicking on "Submit a Comment."

(2) *By hard copy*: Submit by U.S. mail or hand-delivery to: Public Comments Processing, Attn: FWS–R8–ES–2011–0114; Division of Policy and Directives Management;

U.S. Fish and Wildlife Service; 4401 N. Fairfax Drive, MS 2042–PDM; Arlington, VA 22203.

We will post all information we receive on *http://www.regulations.gov*. This generally means that we will post any personal information you provide us (see **Request for Information** section below for more details).

FOR FURTHER INFORMATION CONTACT: Jim Bartel, Field Supervisor, Carlsbad Fish and Wildlife Office, U.S. Fish and Wildlife Service, 6010 Hidden Valley Road, Suite 101, Carlsbad, CA 92011, by telephone at 760–431–9440, or by facsimile to 760–431–9624. If you use a telecommunications device for the deaf (TDD), please call the Federal Information Relay Service (FIRS) at 800–877–8339.

SUPPLEMENTARY INFORMATION:

Request for Information

When we make a finding that a petition presents substantial information indicating that listing a species may be warranted, we are required to promptly initiate review of the status of the species (status review). For the status review to be complete and based on the best available scientific and commercial information, we request information on the San Bernardino flying squirrel from governmental agencies, Native American tribes, the scientific community, industry, and any other interested parties. We seek information on:

(1) The species' biology, range, and population trends, including:

(a) Habitat requirements for feeding, breeding, and sheltering;

(b) Genetics and taxonomy;

(c) Historical and current range, including distribution patterns;

(d) Historical and current population levels, and current and projected trends; and

(e) Past and ongoing conservation measures for the species, its habitat, or both.

(2) The factors that are the basis for making a listing determination for a species under section 4(a) of the Act (16 U.S.C. 1531 *et seq*.), which are:

(a) The present or threatened destruction, modification, or curtailment of its habitat or range;

(b) Overutilization for commercial, recreational, scientific, or educational purposes;

(c) Disease or predation;

(d) The inadequacy of existing regulatory mechanisms; or

(e) Other natural or manmade factors affecting its continued existence.

(3) The potential effects of climate change on the species and its habitat, including information on the upwards shifts in high-elevation forest habitat and changes in the availability of food resources.

If, after the status review, we determine that listing the San Bernardino flying squirrel is warranted, we will propose critical habitat (see definition in section 3(5)(A) of the Act), under section 4 of the Act, to the maximum extent prudent and determinable at the time we propose to

list the species. Therefore, we also request data and information on:

(1) What may constitute "physical or biological features essential to the conservation of the species" within the geographical area currently occupied by the species;

(2) Where these features are currently found;

(3) Whether any of these features may require special management considerations or protection;

(4) Specific areas outside the geographical area occupied by the species that are "essential for the conservation of the species"; and

(5) What, if any, critical habitat you think we should propose for designation if the species is proposed for listing, and why such habitat meets the requirements of section 4 of the Act.

Please include sufficient information with your submission, such as scientific journal articles, other supporting publications, or data, to allow us to verify any scientific or commercial information you include.

Submissions merely stating support for, or opposition to, the action under consideration without providing supporting information, although noted, will not be considered in making a determination. Section 4(b)(1)(A) of the Act directs that determinations as to whether any species is an endangered or threatened species must be made "solely on the basis of the best scientific and commercial data available."

You may submit your information concerning this status review by one of the methods listed in **ADDRESSES**. If you submit information via *http://www.regulations.gov*, your entire submission—including any personal identifying information—will be posted on the Web site. If your submission is made via a hardcopy that includes personal identifying information, you may request at the top of your document that we withhold this personal identifying information from public review. However, we cannot guarantee that we will be able to do so. We will post all hardcopy submissions on *http://www.regulations.gov*.

Information and supporting documentation that we received and used in preparing this finding is available for you to review at *http://www.regulations.gov*, or by appointment, during normal business hours, at the U.S. Fish and Wildlife Service, Carlsbad Fish and Wildlife Office **(**see **FOR FURTHER INFORMATION CONTACT)**.

Background

Section 4(b)(3)(A) of the Act requires that we make a finding on whether a petition to list, delist, or reclassify a species presents substantial scientific or commercial information indicating that the petitioned action may be warranted. We are to base this finding on information provided in the petition, supporting information submitted with the petition, and information otherwise available in our files. To the maximum extent practicable, we are to make this finding within 90 days of our receipt of the petition and publish our notice of the finding promptly in the **Federal Register**.

Our standard for substantial scientific or commercial information within the Code of Federal Regulations (CFR) with regard to a 90-day petition finding is "that amount of information that would lead a reasonable person to believe that the measure proposed in the petition may be warranted" (50 CFR 424.14(b)). If we find that substantial scientific or commercial information was presented, we are required to promptly initiate a species status review, which we subsequently summarize in our 12-month finding.

Petition History

On August 25, 2010, we received a petition dated August 24, 2010, from the Center for Biological Diversity (CBD), requesting that the San Bernardino flying squirrel be listed as endangered or threatened and to designate critical habitat concurrent with listing under the Act. The petition clearly identified itself as a petition, was dated, and included the requisite identification information required at 50 CFR 424.14(a). On October 5, 2010, we sent the petitioner a letter acknowledging our receipt of the petition, and responded that we had reviewed the information presented in the petition and determined that issuing an emergency regulation temporarily listing the species under section 4(b)(7) of the Act was not warranted. We also stated that due to court orders and court-approved settlement agreements for other listing and critical habitat determinations under the Act, our listing and critical habitat funding for Fiscal Year 2011 was committed to other projects. We said that we would be unable to address the petition at that time, but would complete the action when workload and funding allowed. This finding addresses the petition.

Previous Federal Actions

The San Bernardino flying squirrel is a subspecies that was previously recognized in four Notices of Review published in the **Federal Register**. On September 18, 1985, the Service issued the first Notice of Review identifying vertebrate animal taxa native to the United States being considered for possible addition to the List of Endangered and Threatened Wildlife (List), including the San Bernardino flying squirrel (50 FR 37958). Subsequently, three additional Notices of Review dated January 6, 1989 (54 FR 554), November 21, 1991 (56 FR 58804), and November 15, 1994 (59 FR 58982), were issued and presented an updated compilation of vertebrate and invertebrate animal taxa native to the United States, including the San Bernardino flying squirrel, that were being reviewed for possible addition to the List. This subspecies was categorized in these reviews as a "C2" taxon, meaning that listing was possibly appropriate but for which more information was needed before a final decision to list could be made. In 1996 the Service ceased using the C2 list. Subsequent Notices of Review contained only taxon for which the Service has on file sufficient information on biological vulnerability and threats to support proposals to list the species as endangered or threatened, but for which listing is precluded at present by other listing activity. These species are known as candidate species. Thus, the San Bernardino flying squirrel is not a candidate species.

Species Information

The San Bernardino flying squirrel (*Glaucomys sabrinus californicus*) is 1 of 25 subspecies of northern flying squirrel (*Glaucomys sabrinus*). There has been little research done on the subspecies (*G. s. californicus*); therefore, much of the biological information presented is

based on other closely related subspecies of northern flying squirrel. The species (*G. sabrinus*) is a small gliding tree squirrel that lives in mixed-conifer forests (Weigl 2007, p. 898).

The northern flying squirrel's geographic range encompasses southern portions of the Appalachian Mountains in the east and the Rocky Mountains, Sierra Nevada mountain range, and San Bernardino Mountains in the west (Smith 2007, p. 862). The San Bernardino flying squirrel is the most southerly distributed subspecies of northern flying squirrel on the western coast of the United States. It is separated and isolated geographically from the Sierra Nevada subspecies by 164 miles (265 kilometers) and the Mojave Desert (Brylski *et al*. 1998, p. 90). Historically, the San Bernardino flying squirrel was observed in the San Bernardino and San Jacinto Mountains of southern California (San Bernardino County and Riverside County; Grinnell and Swarth 1913, p. 328). The San Gorgonio pass, which probably linked the two ranges during the last ice age, now forms a barrier between the San Bernardino Mountains and San Jacinto Mountains (USFS 2005a, p. 1127). During the last ice age, the northern flying squirrel would have existed farther south than its observed range of the San Bernardino and San Jacinto Mountains, and it is believed that the San Bernardino flying squirrel represents ancestral populations that have been isolated in forested, higher elevation refugia by a warming climate (Butler *et al*. 1991, p. 4; Arbogast 2007, p. 844; Weigl 2007, p. 897).

The subspecies was first described by Rhoads (1897) based on four specimens collected near Squirrel Inn in the San Bernardino Mountains at 5,200 feet (ft) (1585 meters (m)). Grinnell and Swarth (1913, p. 328) also trapped a San Bernardino flying squirrel in the San Jacinto Mountains in the unincorporated community of Idyllwild. Since 1913, there have been anecdotal

sightings of San Bernardino flying squirrels in the San Jacinto Mountains, but no verified sightings or trapping records (USFS 2005a, p. 1228). A study of owl pellets from the San Jacinto Mountains did not find any San Bernardino flying squirrel remains (Stephenson and Calcarone 1999, p. 204). Additionally, the San Jacinto Centennial Resurvey by the San Diego Natural History Museum has failed to detect San Bernardino flying squirrels in their trapping efforts thus far (San Diego Natural History Museum 2011). Therefore, this historical habitat in the San Jacinto Mountains may no longer by occupied by the San Bernardino flying squirrel.

The San Bernardino flying squirrel is genetically distinct from other subspecies of northern flying squirrels (Arbogast 2007, p. 844), and is morphologically different from other flying squirrels. The San Bernardino flying squirrel is paler in color and the smallest in size on a spectrum of subspecies from Alaska to the San Bernardino Mountains. The San Bernardino flying squirrel is an animal that belongs to the Order Rodentia, Family Sciuridae, and Subfamily Petauristinae (Wells-Gosling and Heaney 1984, p. 1). It is designated as a species of special concern by the California Department of Fish and Game and identified as a sensitive species by the U.S. Forest Service (U.S. Forest Service [USFS] 2005a, p. 1127).

The San Bernardino flying squirrel is an arboreal (lives in trees) rodent that is active year-round and primarily nocturnal (Smith 2007, p. 862). Mature squirrels are typically 11–12 inches (in) (28–31 centimeters (cm)) in length and 3.5–5.5 ounces (98–158 grams) in weight (Grinnell and Swarth 1913, p. 329; Sumner 1927, p. 316; Butler *et al.* 1991, p. 12). The San Bernardino flying squirrel's coloration is gray to wood-brown to cinnamon on the upper side of the body and pale cream or white on the underside (Wells-Gosling and Heaney 1984, p. 2). As a

subspecies of northern flying squirrel, it uses a furred membrane called a patagium that extends from wrist to ankle, thus enabling it to glide between trees (Wells-Gosling and Heaney 1984, p. 2). The San Bernardino flying squirrel can easily glide over 60-ft (18-m) expanses and has been known to glide more than 300 ft (91 m) (Butler *et al*. 1991, p. 19). This species tends to be long-lived with individuals living 4–7 years or more (Weigl 2007, p. 900). Northern flying squirrels are considered seasonal breeders (March through May) with typically one small litter (two to four young) per year; substantial energy is put into each offspring (Wells-Gosling and Heaney 1984, p. 4; Smith 2007, p. 862). Two types of nests are normally used by northern flying squirrels: External leaf nests constructed on branches and nests in cavities of trees (Smith 2007, p. 866) that protect the squirrels from the elements, particularly during cold winters.

The main food preference for San Bernardino flying squirrels is truffles, a type of hypogeous (underground) fungi that occurs 2–6 in (5–15 cm) below the surface of the forest floor. San Bernardino flying squirrels have been found to eat fungi from three genera: *Melanogaster*, *Hymenogaster*, and *Gymnomyces* (Butler *et al.* 1991, p. 20). These fungi form symbiotic relationships with the roots of trees under the surface of the soil. Squirrels digest the nutrients from the truffle while simultaneously spreading the truffle spores and inoculating trees throughout the forest and habitat of the squirrel (Pyare and Longland 2001, p. 681; Weigl 2007, p. 900). When snow covers this food resource in the winter, the squirrels eat arboreal lichens and vegetation (Hall 1991, p. 616, Pyare and Longland 2001, p. 684; Smith 2007, p. 869).

San Bernardino flying squirrels are also hunted as prey by other species. Wells-Gosling and Heaney (1984, p. 4) identified the following known predators of northern flying squirrels:

barn owls (*Tylo alba*), great horned owls (*Bubo virginianus*), red-tailed hawks (*Buteo jamaicensis*), spotted owls (*Strix occidentalis*), martens (*Martes americana*), domestic house cats (*Felis catus*), wolves (*Canis lupus*), weasels (*Mustela* spp.), and foxes (*Vulpes* spp. *and Urocyon* spp.) (Wells-Gosling and Heaney 1984, p. 4). Identification of San Bernardino flying squirrel remains have been found in spotted owl pellets in the San Bernardino Mountains, making the spotted owl a known predator of the subspecies (Butler *et al.* 1991, p. 19; Smith *et al.* 1999, p. 24).

We found no information in the petition or our files on the amount of space required by the San Bernardino flying squirrel. Other subspecies of northern flying squirrel have a range of 5–148 acres (ac) (2–60 hectares (ha)) of forest needed to support individuals of flying squirrels (Weigl 2007, p. 900). Typically, squirrels do not use all of this area on a daily basis, but can make longer journeys when searching for mates and food (Weigl 2007, p. 900). The San Bernardino flying squirrel inhabits high-elevation mixed-conifer forests approximately 4,000–8,500 ft (1,585–2,590 m) in elevation (Grinnell 1933, p. 136; Butler *et al.* 1991, p. 2; USFS 2005a, p. 1127). The vegetation of these areas commonly includes *Abies concolor* (white fir), *Quercus kelloggii* (black oak), and *Pinus jeffreyi* (Jeffrey pine) (Rhoads 1897, p. 323; Sumner 1927, p. 315; Grinnell 1933, p. 136; Butler *et al.* 1991, pp. 2, 5).

San Bernardino flying squirrels are typically found in mature old-growth forests, although second-growth stands may still support relatively high densities of the subspecies (Butler *et al.* 1991, p. 5). Microhabitat factors related to mature forests (such as stumps, snags, and dead trees) are used by the squirrel for nesting and foraging habitat (Butler *et al.* 1991, p. 5).

The subspecies also tends to choose trees for dens or nests that are over 100 ft (30 m) tall with diameters (at breast height) greater than 30 in (76 cm) (Butler *et al.* 1991, p. 17). Moisture is also a key factor in San Bernardino flying squirrel habitat, especially within the drier forests found in southern California (Smith 2007, p. 866). San Bernardino flying squirrels tend to occur more often in riparian areas, such as near a stream or spring (USFS 2005a, p. 1129), which retain an increased level of moisture that helps promote the growth of truffles (Meyer and North 2005, p. 1015). The canopy of a mature forest also helps to retain moisture and provide both shelter and protection from predators (USFS 2005a, p. 1129). Larger and older trees with associated woody debris and decaying logs also tend to be correlated with more abundant truffles in the soil (Weigl 2007, p. 900). Therefore, the San Bernardino flying squirrel's habitat seems to be related to conditions that are optimal for nesting and provide an ample supply of food.

Trapping efforts historically detected low numbers of flying squirrels in the San Bernardino Mountains (Sumner 1927, p. 316). In our available information, we found only two recent trapping surveys (1991 and 1998) that included searching for San Bernardino flying squirrels through the San Bernardino National Forest (Butler *et al*. 1991, p. 13; Driessen *et al*. 1998, p. 4). Butler *et al*. (1991, p. 14) estimated the density of San Bernardino flying squirrels in the San Bernardino Mountains at 0.94 flying squirrels per ha (2.5 ac) based on one trapping grid. This estimate is in the lower range of northern flying squirrel densities found in the western United States (0.9–3.07 squirrels per ha (2.5 ac); Butler *et al*. 1991, p. 6). Butler *et al*. (1991, p. 10) found 22 San Bernardino flying squirrels during trapping, with the greatest number of squirrels on the west side of the Bear Mountain Ski Area. A trapping effort in 1998 captured six San Bernardino flying squirrels at a site near the unincorporated community of Fawnskin and

three squirrels at a site near Bear Mountain (Driessen *et al.* 1998, pp. 4–6). However, no recent studies have been done on the abundance of San Bernardino flying squirrels in the San Bernardino Mountains.

Butler *et al*. (1991, p. 26) looked for remains of San Bernardino flying squirrels in spotted owl pellets to estimate distribution of the species within the San Bernardino National Forest. They found 172 instances of San Bernardino flying squirrels within pellets from 43 owl nest sites between 1987 and 1991 (Butler *et al.* 1991, p. 19). Using these data, they extrapolated habitat occupied by San Bernardino flying squirrels to estimate the following range: Sugarpine Mountain and Lake Silverwood in the west, east to Lake Arrowhead and Big Bear Lake regions, and south to parts of San Gorgonio Wilderness, the Thurman Flats area along Mill Creek, and the Raywood Flat area along the Gorgonio River (Butler *et al.* 1991, pp. 19–26). Rangers and biologists of the Mountaintop Ranger District (San Bernardino National Forest) have received numerous anecdotal reports and photographs of San Bernardino flying squirrels in residential areas of the unincorporated communities of Big Bear, Angeles Oaks, Fawnskin, and Lake Arrowhead (USFS 2005a, p. 1128).

Evaluation of Information for this Finding

Section 4 of the Act (16 U.S.C. 1533) and its implementing regulations at 50 CFR 424 set forth the procedures for adding a species to, or removing a species from, the Federal Lists of Endangered and Threatened Wildlife and Plants. A species may be determined to be an endangered or threatened species due to one or more of the five factors described in section

4(a)(1) of the Act:

(A) The present or threatened destruction, modification, or curtailment of its habitat or range;

(B) Overutilization for commercial, recreational, scientific, or educational purposes;

(C) Disease or predation;

(D) The inadequacy of existing regulatory mechanisms; or

(E) Other natural or manmade factors affecting its continued existence.

In making this 90-day finding, we evaluated whether information regarding potential threats to the San Bernardino flying squirrel, as presented in the petition and other information available in our files, is substantial, thereby indicating that the petitioned action may be warranted. In several instances, the petitioner associated a potential threat with a factor different than the factor under which the Service generally analyzes that threat; those particular instances are noted below where appropriate and the threats are analyzed under the factor consistent with Service guidance. Our evaluation of this information is presented below.

A. The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range.

Climate Change—Information Provided in the Petition

The petition states that the ecological impacts of climate change are causing alterations in the habitat of many species in response to rising temperatures (Bonfils *et al.* 2008, pp. 6421, 6422; CBD 2010, p. 26), changes in precipitation and precipitation extremes (Leung *et al.* 2004,

pp. 75, 109; CBD 2010, p. 36), reduced snowpack in California mountains (Pierce *et al.* 2008, p. 6425; CBD 2010, p. 32), and increased drought duration and severity causing lower soil moisture (CBD 2010, p. 37; Dominguez *et al.* 2010, pp. 499, 500). The petition claims that these climate changes are leading to a loss of the mixed-conifer/black-oak forest habitat used by the San Bernardino flying squirrel. *Abies concolor* (white fir) and *Pinus jeffreyi* (Jeffrey pine) trees in the adjacent Santa Rosa Mountains have shown an upslope shift over the past 30 years, a trend that may suggest a similar change is also occurring in the San Bernardino and San Jacinto Mountains (Kelly and Goulden 2008, p. 11823; CBD 2010, p. 40). The petition states that high-elevation species have limited suitable habitat for movement in response to these climate-caused shifts in habitat, and may simply run out of suitable habitat to occupy. The petition states that San Bernardino flying squirrels are more vulnerable to climate change because they are a high-elevation species at the southern limit of the species' range where climate change impacts are expected to be more pronounced.

Climate Change—Evaluation of Information Provided in the Petition and Available in Service Files

After our evaluation of information provided in the petition, we find that the petition provides information to support the claim that the San Bernardino flying squirrel's habitat may be affected by impacts due to climate change. Consideration of ongoing and projected climate change is a component of our analyses under the Endangered Species Act. Described in general terms, "climate change" refers to a change in the state of the climate (whether due to natural variability, human activity, or both) that can be identified by changes in the mean or variability

of its properties (e.g., temperature, precipitation) and that persists for an extended period, typically decades or longer (Intergovernmental Panel on Climate Change (IPCC 2007, p. 30). Various types of changes in climate can have direct or indirect effects on species, and these may be positive or negative depending on the species and other relevant considerations, such as the effects of interactions with nonclimate conditions (e.g., habitat fragmentation). We use our expert judgment to weigh relevant information, including uncertainty, in our consideration of various aspects of climate change that are relevant to the San Bernardino flying squirrel. Climate is influenced primarily by long-term patterns in air temperature and precipitation. Changes in temperature and rainfall patterns are expected to shift the distribution of ecosystems northward (IPCC 2007, p. 33) and up mountain slopes (McDonald and Brown 1992, pp. 411–412; IPCC 2007, p. 33). These predicted climate shifts could lead to a loss in conifer/black oak forests, thus potentially eliminating suitable nesting sites, food, and other habitat requirements for San Bernardino flying squirrels. Flying squirrels occur more frequently near riparian ecosystems (USFS 2005a, p. 1129; Smith 2007, p. 866); therefore, changes in water regime or decreased flow could affect vegetation structure necessary for the species (Smith 2007, p. 864). In summary, we find the petition presents substantial scientific or commercial information indicating that the San Bernardino flying squirrel may be threatened by the effects of climate change based on the present or threatened destruction, modification, or curtailment of its habitat or range.

Forest Fuel-Reduction Practices—Information Provided in the Petition

The petition notes that San Bernardino flying squirrel habitat is lost not only due to climate change, but also due to fuel reduction projects in the San Bernardino and San Jacinto Mountains. Salvage logging and construction or maintenance of fuel breaks and Wildland-Urban Interface (WUI) Defense and Threat Zones are also cited by the petitioner as threats to the habitat of the San Bernardino flying squirrel. The petition claims that these fuel-reduction practices reduce suitable habitat and also remove or damage important habitat components including important food resources (USFS 2005b, pp. 25–27; CBD 2010, p. 46). The petitioner states that fuel-reduction projects degrade the habitat of the flying squirrel.

Forest Fuel-Reduction Practices—Evaluation of Information Provided in the Petition and Available in Service Files

We evaluated the information in the petition and in our files and found that forest management practices in the urban-forest interface of communities in the San Bernardino Mountains, in combination with other habitat threats, may add to the degradation of habitat structure or loss of habitat needed by the San Bernardino flying squirrel. Fuel treatments used to reduce the intensity of fires and the amount of fuel in the forest include removing dead trees and thinning the forest (USFS 2005b, p. 27). These practices may remove habitat for San Bernardino flying squirrel nests (such as snags and dead trees) and the canopy structure needed to maintain a moist sheltered habitat. Additionally, fuel breaks and WUI defense zones are constructed along roads, ridgelines, and buildings to prevent the spread of wildfire (USFS 2005b, p. 27). All vegetation is regularly removed from these WUI areas. Where San Bernardino flying squirrel habitat occurs within fuel break areas, these practices remove some vegetation used by flying

squirrels. Although these planned actions may affect San Bernardino flying squirrel habitat within the San Bernardino National Forest, the U.S. Forest Service has committed to strategically locating fuel treatments with respect to natural resources and sensitive habitat (USFS 2005b, p. 26). Therefore, the San Bernardino Land Management Plan diminishes the impacts to San Bernardino flying squirrel habitat by strategically placing fuel management areas.

Although we currently do not have information to support the determination that these practices decrease the food supply of San Bernardino flying squirrels, fuel-reduction practices near urban communities in the San Bernardino Mountains, combined with habitat loss from other sources, could impact the amount and quality of San Bernardino flying squirrel habitat. In summary, we find that the petition presents substantial scientific or commercial information indicating that the San Bernardino flying squirrel may be threatened by the effects of fuel-reduction practices in the San Bernardino Mountains.

Urban Air Pollution—Information Provided in the Petition

Urban air pollution was cited in the petition as a threat to the San Bernardino flying squirrel due to its ability to potentially change the availability of resources for food, cover, and nesting. Specifically, the petition claims that increased nitrogen deposition and ozone enrichment alter the diversity and availability of epiphytic lichen (a symbiotic organism composed of fungus and algae that grow on plants for mechanical support) communities that the squirrels depend on for food (Fenn *et al*. 2008, pp. 505, 508; CBD 2010, p. 56). This increase in nitrogen deposition and ozone enrichment was also cited by the petitioner as causing a decrease

in the understory plant community that may provide protection from predators of flying squirrels (CBD 2010, p. 56). Additionally, air pollution was cited as being responsible for a decrease in the diversity of fungi and an increase in susceptibility of trees to drought (CBD 2010, p. 57).

Urban Air Pollution—Evaluation of Information Provided in the Petition and Available in Service Files

We evaluated the information in the petition and in our files and found no information that connects urban air pollution to the degradation or loss of San Bernardino flying squirrel habitat. The petition suggests that urban air pollution is a threat to the San Bernardino flying squirrel due to its ability to potentially change the availability of resources for food, cover, and nesting. We acknowledge that information in our files and in the petition indicates that urban air pollution affects the Los Angeles basin, including the San Bernardino Mountains (Fenn *et al*. 2003, p. 396; Fenn *et al.* 2008, p. 502), with nitrogen deposition impacts including eutrophication in water bodies, community composition changes in vegetation, low visibility in the area, and increased ozone pollutants (Fenn *et al*. 2003, pp. 391–392). However, nitrogen emissions within the southern California region decreased from 1975–2000 due to stricter regulations (Fenn *et al*. 2003, p. 401). Our evaluation of information in the petition and our files did not reveal a connection between urban air pollution and San Bernardino flying squirrel habitat.

Although urban air pollution has been observed in the region, the effects of this pollution on the San Bernardino flying squirrel are unknown. Fenn *et al.* (2008, p. 505) reported that

increased nitrogen deposition can affect the diversity of acidophytes (symbiotic organisms that occur on host tress with an acidic pH) in a lichen community. While nitrogen deposition rates in the Los Angeles basin are high compared to the rest of the country, we do not have information on the impacts of decreased lichen diversity or availability to San Bernardino flying squirrels. There was no information presented in the petition or found in our files on the effects of urban air pollution on the flying squirrel's main source of food (truffles).

The petitioner also claims that nitrogen deposition and ozone enrichment cause declines in understory plant diversity and higher susceptibility to drought in plants. The petitioner did not support their claim or provide information that documents a connection between the loss of understory plant diversity and the main truffle food source of the squirrel. The loss of truffles is based on the assumption that the decreasing trend seen with lichens would be similar in truffles (CBD 2010, p. 57). Therefore, after our evaluation of the information, the petition does not present evidence on how urban air pollution might affect the San Bernardino flying squirrel's main food source. While research shows that urban air pollution could be affecting the San Bernardino Mountains, it is unclear how these changes in plant and lichen availability, diversity, and physiology will directly or indirectly affect San Bernardino flying squirrel.

With regards to urban air pollution, the petitioner does not provide citations to support assertions concerning the present or threatened destruction, modification, or curtailment of habitat or range for the San Bernardino flying squirrel. Their arguments rely on the loss of diversity and availability of acidophyte lichens, declines in understory plant diversity, and a higher susceptibility to drought conditions in plants without drawing on evidence of how these

changes are negatively affecting the San Bernardino flying squirrel. No information is provided to determine how these changes directly affect San Bernardino flying squirrels. Therefore, we find the petition, as well as other information in our files, does not present substantial scientific or commercial information to indicate that urban air pollution may present a threat to the San Bernardino flying squirrel such that the petitioned action may be warranted. We will, however, further investigate whether urban air pollution is a potential threat to the habitat of the San Bernardino flying squirrel in our 12-month status review.

Urban Development—Information Provided in the Petition

Urban development in the San Bernardino and San Jacinto Mountains was noted in the petition as a threat to San Bernardino flying squirrel habitat. The petition asserted that the expansion of existing communities and ski resorts, as well as new development, led to the loss and fragmentation of remaining habitat, accompanied by the need for further fuel reductions around these human structures (USFS 2005a, p. 1135; CBD 2010, pp. 57–59), and require expanded fuel management for WUI Defense Zones (CBD 2010, pp. 57–59). The petition states that the San Bernardino flying squirrel is threatened by loss and fragmentation of mature forest habitat in the San Bernardino Mountains area.

Urban Development—Evaluation of Information Provided in the Petition and Available in Service Files

Through the evaluation of the petition and information in our files, we found that several development projects are planned in areas that contain San Bernardino flying squirrels or within habitat considered suitable for the taxon (County of San Bernardino 2007, pp. 15, 37; Michael Brandman Associates 2010, pp. 2-2, 2-3; PCR Services Corporation 2010, pp. 2-3, 3.C-26; Vista Community Planners 2010, p. 1-3). The U.S. Forest Service states that urban development impacts the habitat of the San Bernardino flying squirrel (USFS 2005a, p. 1135). Urban development may affect San Bernardino flying squirrel habitat through direct loss of habitat, habitat fragmentation, and habitat modification through such activities as fuel treatment around structures (USFS 2005a, p. 1135). Habitat fragmentation may occur in some areas where openings created between trees are wider than 200 ft (61 m) and squirrels are unable to glide between trees (USFS 2005a, p. 1135). One recent survey has a confirmed observation of San Bernardino flying squirrels within a development area (PCR Services Corporation 2010, p. 3.C-26). Many urban development projects have incorporated best management practices during construction to benefit the San Bernardino flying squirrel (Michael Brandman Associates 2010, p. ES-26; PCR Services Corporation 2010, pp. ES-19, ES-20; Vista Community Planners 2010, p. 3-4).

Although the Service has received notification letters and has commented on proposed projects (USFWS 2006, pp. 1–4), the Service does not have a regulatory role in the review of these proposed development projects because the San Bernardino flying squirrel is not a listed species under the Act. These proposed projects are expected to result in the direct loss of habitat, habitat fragmentation, or habitat modification. Therefore, we find the petition presents

substantial scientific or commercial information indicating that the San Bernardino flying squirrel may be threatened by urban development.

Summary of Factor A

In summary, we find that the petition and other information in our files present substantial information indicating that environmental impacts resulting from climate change, forest fuel-reduction practices, and urban development may be threats to the habitat or range of the San Bernardino flying squirrel. Coupled with range reduction due to the likely extirpation of the squirrel in the San Jacinto Mountains, and low density of squirrels detected within the San Bernardino Mountains, these habitat impacts may affect the San Bernardino flying squirrel. The petition and other information in our files do not present substantial information indicating that urban air pollution may be a threat to the San Bernardino flying squirrel, although we will further investigate urban air pollution in our 12-month status review.

B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes.

Information Provided in the Petition

The petition asserts that San Bernardino flying squirrels are considered a "nuisance species" by nesting in attics, and that their removal may cause injury or death. Additionally, the petition notes the potential for San Bernardino flying squirrels to be captured as pets. The petition also includes the potential threat of house cat predation, which we discuss below under

Factor C (Disease or Predation).

Evaluation of Information Provided in the Petition and Available in Service Files

We reviewed information in our files and the information provided by the petition, and did not find substantial information to indicate that San Bernardino flying squirrels are being injured or killed by people, nor was any reference information provided to support that they are collected as pets. There is some evidence that San Bernardino flying squirrels have been run over by vehicles in the San Bernardino National Forest (Chris Brown 2010, pers. comm.); however, there was no information presented in the petition or found in our files on the effects of such mortality on the San Bernardino flying squirrel. We find that the petition does not present substantial scientific or commercial information to indicate that overutilization for commercial, recreational, scientific, or educational purposes may present a threat to the San Bernardino flying squirrel such that the petitioned action may be warranted. However, we will further investigate whether injury or death caused by humans and collection as pets are potential threats to the San Bernardino flying squirrel in our 12-month status review.

C. Disease or Predation.

Information Provided in the Petition

The petition claims that, although San Bernardino flying squirrel diseases have not been well-studied, some evidence suggests that disease could pose a threat to the species. West Nile

virus has been detected in grey squirrels (*Sciurus griseus*) in the San Bernardino Mountains. Additionally, the petition states that climate change may lead to increases in temperature and humidity, allowing new pathogens to expand northward and upslope, exposing the subspecies to new threats from disease. The petition also notes that San Bernardino flying squirrels face an increasing risk of predation from domestic house cats due to the expansion of communities and development in the San Bernardino and San Jacinto Mountains.

Evaluation of Information Provided in the Petition and Available in Service Files

We did not find substantial information to indicate that West Nile virus presents a threat to the San Bernardino flying squirrel. There was no information provided in the petition (nor in our files) to support the petitioner's claim that West Nile virus is the direct cause of grey squirrel population declines, nor is there evidence that San Bernardino flying squirrels are being affected by the virus. While the petition provides some information to suggest that rising temperatures can expand the range and reproductive output of some pathogens, no information was provided to indicate that this is occurring within the range of the San Bernardino flying squirrel, nor does information in our files indicate that new pathogens threaten the subspecies now or in the future. However, we will further investigate whether West Nile virus is a potential threat to the San Bernardino flying squirrel in our 12-month status review.

Information provided by the petitioner and readily available in our files indicates the San Bernardino flying squirrel may be threatened by predation from domestic and feral cats (Mitchell and Beck 1992, p. 200; USFS 2005a, pp. 1134, 1135), and this threat may be increasing due to

increases in residential development within the range of this subspecies. Domestic cats can range and hunt across both urban and adjacent forested areas. Several residential development projects are planned in areas that contain San Bernardino flying squirrels or within suitable habitat for the species (County of San Bernardino 2007, pp. 15, 37; Michael Brandman Associates 2010, pp. 2-2, 2-3; PCR Services Corporation 2010, pp. 2-3, 3.C-26; Vista Community Planners 2010, p. 1-3). Domestic house cats are listed as a predator of northern flying squirrel species (Wells-Gosling and Heaney 1984, p. 4) and have been documented preying on the southern flying squirrel (*Glaucomys volans*; found through eastern North America south to Mexico and Honduras) (Mitchell and Beck 1992, p. 200). Additionally, Hall *et al*. (2000, p. 23) found California ground squirrels (*Spermophilus beecheyi*) occasionally in the scat of feral cats. Research shows that feral cats show a preference for hunting native species in riparian habitats (Hall *et al.* 2000, p. 23), and it is reasonable to assume that feral and free-ranging cat abundance would increase as more residential development occurs (Jurek 1994, p. 1; Hall *et al*. 2000, p. 20).

All species are subjected to some level of disease and predation under natural conditions, and the San Bernardino flying squirrel has many natural predators (see **Background** section). We do not have substantial information from the petition or in our files to suggest that this naturally occurring predation is outside the range of natural variation in the ecosystem. However, domestic and feral cats are an unnatural, nonnative, and possibly increasing predation threat to the San Bernardino flying squirrel (Mitchell and Beck 1992, p. 197).

In summary, we find that the information provided in the petition, as well as other

information in our files, presents substantial scientific or commercial information indicating that the petitioned action may be warranted due to predation of the San Bernardino flying squirrel by domestic and feral cats. As stated above, we will also further investigate whether West Nile virus is a potential threat to the San Bernardino flying squirrel in our 12-month status review.

D. The Inadequacy of Existing Regulatory Mechanisms.

International, Federal, and State Greenhouse Gas Regulatory Mechanisms—Information Provided in the Petition

The petition states that current greenhouse gas regulatory mechanisms are inadequate to protect the San Bernardino flying squirrel and its habitat, particularly concerning impacts related to climate change. The United Nations Framework Convention on Climate Change and the Kyoto Protocol were noted as inadequate international regulatory mechanisms. The petitioners cite the Service's 2008 listing of the polar bear (*Ursus maritimus*), which concluded that there are no regulatory mechanisms that address the anthropogenic causes of climate change (such as greenhouse gas emissions) and the impact of warming temperatures and altered precipitation patterns on diminishing sea ice (73 FR 28288, May 15, 2008). California laws and initiatives (including the Global Warming Solutions Act of 2006 and California Environmental Quality Act (CEQA)) and the Federal Clean Air Act, Energy Policy and Conservation Act, Clean Water Act, and Endangered Species Act were all also listed as inadequate greenhouse gas regulatory mechanisms.

International, Federal, and State Federal Greenhouse Gas Regulatory Mechanisms—Evaluation of Information Provided in the Petition and Available in Service Files

For environmental impacts that may be due to climate change, as discussed above under Factor A, we will further explore any existing regulatory mechanisms that may ameliorate these effects in our 12-month status review.

San Bernardino National Forest Land and Resource Management Plan (LRMP)—Information Provided in the Petition

The San Bernardino National Forest Land and Resource Management Plan (LRMP) is listed by the petitioner as inadequate to protect the San Bernardino flying squirrel or its habitat. The petitioner claims the Plan's fuel reduction program degrades the mixed-conifer forest habitat and does not adequately allow for monitoring and evaluation of impacts to the squirrel.

San Bernardino National Forest Land Management Plan (LRMP)—Evaluation of Information Provided in the Petition and Available in Service Files

The San Bernardino National Forest LRMP was prepared in accordance with the National Forest Management Act of 1976 (NFMA), the regulatory mechanism directing the administration and management of national forests. The Plan's intent is to maintain forests in a sustainable manner to allow for social, economic, and ecological benefits to continue for future generations. The San Bernardino National Forest LRMP includes provisions specifically to reduce habitat

loss and fragmentation and reduce conflicts with development (USFS 2005b, p. 23). While we agree that creating fuel breaks may remove some components of San Bernardino flying squirrel habitat, we do not find substantial information that the NFMA, or the level of monitoring of impacts performed by the Forest Service, is inadequate in addressing the threat of habitat loss in the San Bernardino National Forest. After evaluation of the petition and information in our files, the petitioner does not provide adequate information to support the claim that San Bernardino National Forest LRMP is an inadequate existing regulatory mechanism for the San Bernardino flying squirrel.

State Regulatory Mechanisms—Information Provided in the Petition

In addition to discussing State regulatory mechanisms related to greenhouse gas emissions, the petition claims local agencies are not adequately evaluating the individual and cumulative impacts of development projects on the San Bernardino flying squirrel despite its status as an "Endangered, Rare, or Threatened Species" under CEQA (CBD 2010, p. 62).

State Regulatory Mechanisms—Evaluation of Information Provided in the Petition and Available in Service Files

The petition provides no information to support the claim that local agencies are not adequately evaluating the individual and cumulative impacts of development projects on the San Bernardino flying squirrel under CEQA. CEQA does provide some protection for unlisted species through requiring public agencies to disclose environmental impacts of a project on native species and natural communities. CEQA also requires the identification and mitigation of

project impacts, unless the agency makes a finding of overriding consideration. Therefore, CEQA does provide some protection for the San Bernardino flying squirrel and its habitat.

Summary of Factor D

We find that the petition does not present substantial scientific or commercial information to indicate that the inadequacy of existing regulatory mechanisms may present a threat to the San Bernardino flying squirrel such that the petitioned action may be warranted. However, we will further investigate whether the inadequacy of existing regulatory mechanisms is a potential threat to the San Bernardino flying squirrel in our 12-month status review.

E. Other Natural or Manmade Factors Affecting Its Continued Existence.

Information Provided in the Petition

The petition identified environmental impacts resulting from climate change as a factor impacting the San Bernardino flying squirrel. We know of no element of the San Bernardino flying squirrel's life history or physiology that would be directly affected by changes in climate. Predicted climate changes could impact forested environments upon which San Bernardino flying squirrels depend. Therefore, we addressed all climate change threats under Factor A above.

The petition did not identify any other natural or manmade factors that could potentially

impact the San Bernardino flying squirrel.

Evaluation of Information Provided in the Petition and Available in Service Files

The available information in our files does not indicate any threat to the San Bernardino flying squirrel from other natural or manmade factors affecting its continued existence. The limited range and low density of the subspecies suggest that San Bernardino flying squirrels may be more vulnerable to stochastic events such as large wildfires, as seen in other species with small populations and narrow ranges (Kohlmann *et al.* 2005, pp. 85, 86). However, we have no information at this time in regard to San Bernardino flying squirrels to support this theory, although we will further investigate whether this is a potential threat in our 12-month finding. Therefore, we find that the petition and information readily available in our files do not provide substantial scientific or commercial information to indicate that other natural or manmade factors may present a threat to the San Bernardino flying squirrel such that the petitioned action may be warranted.

Finding

On the basis of our evaluation of the petition and other readily available data under section 4(b)(3)(A) of the Act, we determine that the petition presents substantial scientific or commercial information indicating that listing the San Bernardino flying squirrel throughout its entire range may be warranted. This finding is based on information provided under Factors A and C. We determine that information provided under Factors B, D, and E does not present

substantial information.

Because we have found that the petition presents substantial information indicating that listing the San Bernardino flying squirrel may be warranted, we are initiating a status review to determine whether listing the San Bernardino flying squirrel under the Act is warranted.

The "substantial information" standard for a 90-day finding differs from the Act's "best scientific and commercial data" standard that applies to a status review to determine whether a petitioned action is warranted. A 90-day finding does not constitute a status review under the Act. In a 12-month finding, we will determine whether a petitioned action is warranted after we have completed a thorough status review of the species, which is conducted following a substantial 90-day finding. Because the Act's standards for 90-day and 12-month findings are different, as described above, a substantial 90-day finding does not mean that the 12-month finding will result in a warranted finding.

References Cited

A complete list of references cited is available on the Internet at *http://www.regulations.gov* and upon request from the Carlsbad Fish and Wildlife Office (see **FOR FURTHER INFORMATION CONTACT**).

Author

The primary authors of this notice are the staff members of the Carlsbad Fish and Wildlife Office.

Authority

The authority for this action is the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq*.).

Date: January 19, 2012

Daniel M. Ashe

Director, U.S. Fish and Wildlife Service

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